The Science of Successful Surgery.

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Although I have the honor to appear before you this evening in the role of Orator, and thereby lend my countenance to a time-honored custom, it is not proper to simulate a respect for this useless relic, which I do not feel.

The annual address is a most reckless spendthrift of the time of scientific bodies; equalled in this characteristic by extempore discussions alone. Good scientific work throughout the entire year is better than a long address in January.

With such sentiments, Fellows of the Academy, do I to-night enter upon my theme, with little worthy of the telling.

"What the subject?" has been a pressing question. When I was appointed to this duty for 1881, I expected to detail with complaisant text the surgical advances and triumphs of the preceding twelve-month; but as you know, at the request of the Academy, I gave place to Professor Gross, the elder, who delivered his historic monograph, "John Hunter and his Pupils."

The notes made for that address, seven years ago, would verily seem like echoes from a bygone generation, so rapidly have the wheels of progress run; and indeed the compendiums, annuals and indexes of recent birth cover such ground too thoroughly for me to attempt a single-handed rivalry.

I shall, therefore, offer you a few thoughts on

the Science or Philosophy of Successful Surgery, in the hope of thereby doing a humble share in advancing the purposes of this Society.

True it is that Successful Surgery is the child of those, whose personal labors, fostering devotion and ever watchful eyes have brought it through infantile perils and adolescent temptations to a glorious and noble manhood.

I wish, however, to look to night not only upon the individual traits belonging to these "Makers of Surgery," but to those characteristics which have been developed in the life-history of this personified Surgery. Successful Surgery, as an individuality, has definite attributes which those of us who can never be makers of anything, must recognize, lest we retard the growth of surgical science and bring obloquy upon our soon-to-be-forgotten names. This art is perennial and will outlive our retrogressive thrusts; hence to save ourselves, we must, under the goad of keener-brained men, struggle to keep pace with her quick strides.

The foundation of much unsuccessful surgery, the cause of much popular distrust in surgical performance, is defective education—whether it be in the collegiate teaching of medical students, in the careless instruction of surgical assistants, or in the improper training of hospital nurses. We are very responsible for such a state of affairs, for there is scarcely a Fellow in this Academy who has not a prominent voice in some school or hospital. Indeed one of the requisites of fellowship is the holding of such a position, or in lieu thereof, the performance of valuable scientific work. Why, then, do we not, individually and collectively, have the bravery to insist upon, and the generosity to aid in, the correction of this wrong. Can we claim ignorance of the fact, that in numbers of medical schools, the sole literary

requirement of the raw recruit is the possession of a white skin and a male apparel? Is it news to us that he who knows not the meaning of *gyrus* and *sulcus* sits on the same bench with, and listens to the same words as he whose studies have carried him to the surgical intricacies of cerebral localization?

What hope is there for successful surgery while good men abet such anomalies by accepting responsible posts as teachers in such false temples of learning! What success can we expect from the pupil who sees his masters such embodiments of false logic! Again, how can the student learn surgery without anatomy? How can he learn anatomy without facilities for examining museum specimens and for making dissections, without instruction in the anatomical and surgical landmarks of his own ever-present body? Are not cadavera largely wasted by the pupil who dissects in an anatomical room destitute of skeleton and blackboard and guiltless of the presence of catheter, bellows, or even tanks for washing viscera? Does any student of medicine ever study the dissected body in the erect posture? How slow must be the march of improvement, until each and every guilty school is proscribed, and the mutilated and maltreated public protected by the State assuming the power of examination and license! How like these days to those in which Hippocrates found the ignorant physician suffering no punishment but disgrace, which it was truly said galled not him familiar with it!

Very faulty also is the surgical instruction obtained by the internes of many hospitals. Fortunate above their brethren who receive no such appointments, but yet unlucky too, if compelled to serve under careless, hurried, or ignorant chiefs! Unsuccessful surgery of after years is often due to imitation, perhaps unconscious, of

the faults of a long-dead hospital superior. It is the unwritten duty of the chief to aid in the perpetuation of good surgery by an example of accurate, painstaking and therefore successful work. If he have not time or ability to thus aid patient and pupil, whose interests are truly one, let him step aside for another. The hospital of to-day has no need of the surgical figure-head, however great his name; no room for the bungler, who sacrifices life and prostitutes the high calling of surgeon by inoculating his patients by means of dirty fingers and soiled linen.

An evil influence is exerted also by the selfish hospital surgeon who never permits his junior to do major operations. An intelligent interne gives his time to the hospital, that he may learn. It is, therefore, the chief's duty to give him an opportunity to operate, under the chief's direct personal supervision, be it understood, when the patient's safety and the hospital's rules and interests do not contravene. In homicide cases, in operations whose expediency has not been fixed by general consent, in procedures requiring the well-trained educated touch, such deputizing is not permissible; but we all know that a resident surgeon can justly undertake amputations and many other operations, if we supply the experienced judgment, and guide the successive steps of the mechanical performance. A little less selfishness, a little more generosity on the part of attending surgeons would increase the world's youthful supply of successful operators.

Much otherwise successful work is vitiated by carelessly selected assistants. An assistant who does not know the danger of anæsthesia had better be relegated to the practice of cheiropedy; and especially so, if in addition he be ignorant of the fact that suppuration in an operation-wound is usually the fault of the surgical handiwork.

It has been said that the lucky are never the lazy or incompetent; the unlucky never the valiant or wise. The successful surgeon is largely so by virtue of his own inherent fibre; and the personal equation is a factor deserving consideration in surgical, as in astronomical problems.

The surgeon to attain success must above all things be a man of executive ability and manual dexterity; but to these he must add that care, in details of operations and after treatment, as will prevent the unexpected from defeating the object of his well-planned and well executed handiwork. Absence of executive ability is as conspicuous among those holding surgical posts, as it is in those occupying other positions of trust. A merchant, with too large a contract for his feeble executive grasp, is certainly less ludicrous and pitiable than the surgeon, whose constant appeal for suggestions and whose frequent operative vacillations show that he had no well defined procedure in mind when he made his initial incision. Unexpected difficulties, unforseeable complications may require operative change, and true regard for the patient may demand professional consultation with the by-standers; but this truth does not condone the fault of a scatter-brained operator, who knows neither what he intends to do, what he wants to do, nor what he ought to do. He is worse than the tyro who shuts his eyes and leaps aside at the first arterial spurt, instead of thrusting his finger tip against the offending vessel's mouth.

Manual dexterity, though inherent in some, may be acquired by most of us, if its seeds are nourished early in life. Give the embryo surgeon a kit of tools, a jig-saw and a lathe; or let him work in the sooty forge of the neighboring blacksmith shop, as did Joseph Pancoast, and you will either develop his sleeping manual skill or prove

before college days his inaptitude for a surgeon's work. Can you expect any medical school to make a surgeon of a man who cannot tie a dextrous knot, point a lead pencil, or sharpen a jack-knife?

The practice of ophthalmology, otology, laryngology and gynecology, conduce greatly to the manipulative skill of a surgeon. The delicate touching and the Lilliputian instruments required in cataract extraction, for example, well train the hand for a neat carotid ligation, a successful tracheotomy, or an artistic trephining. Besides that it puts the surgeon in possession of instruments better suited to perform such deeds than the clumsy tools of the ordinary operating case. He is not likely then to select a sword-like scalpel for an amputation, more neatly done with a three inch bistoury. In my own surgical work I find my cataract knife a constant companion; and rarely do an operation without the aid of strabismus forceps.

It must be observed too, that in these qualities of executive capacity and manual skill, there is no aristocracy of talent. The surgeon, as the poet, must be born, not made; but he need not be born of chirurgical parentage, or even in a surgical atmosphere. I have seen the best surgical work done by young men, who have had no special surgical opportunities in birth, friendship, or education; while the worst may be seen at the hands of others blessed with every facility of instruction, observation and experience.

Let not the experienced operator, whose well-trained hand obeys with seeming recklessness the decisions of his rapid brain, despise, however, the painstaking care of his less dexterous brother. Genius, we are told, is eternal patience, and the fearless accuracy of the skillful is the reward of well-spent hours.

A brilliant operator without caution and care

becomes the unsafe surgeon, whose skill leads to excesses which his lack of care makes unwarrantable. "*Chirurgus mente prius et oculis agat quam manu armata.*" I have no respect for the surgeon who cares more for the number and novelty of his operations than for the welfare of his patients. A record-making surgeon is to be avoided. A little caution would diminish the number of hysterectomies of wombs containing living fœtuses, and show us fewer incisions of the pregnant uterus for ovarian cysts! So, care in detail will counter-balance much inferior operative work.

Above all, the successful surgeon is a man of action. Experience and knowledge must be there, but they are of little value without action. Inexperience and ignorance are the parents of timidity and recklessness. To avoid these dangers he must have experience and knowledge, which though power, are mere possibilities until used as a source of deeds. The victory of battle is to the leader who does most, not to him who knows most. The true surgeon often takes the offensive, which is for the intrepid alone; but the weak surgeon falters and lets death come because of his offensive hesitency. The requirements of aggressive surgery demand a form of inherent moral power absent in many individuals, though, perhaps, replaced by gentler and more lovable qualities. Self-reliance must make the aspirant for surgical honors equal to all his opportunities, for it has been well said that self-trust is the first step to success. He also needs the qualities of that hero in romance who had "the energy of silence, of patience, of the profound strategy which lies in unswerving persistence."

A knowledge of the collateral branches of medicine seems more essential to good surgery than does an acquaintance with surgery to successful

medicine. A good physician—I mean a specialist in medical practice—may be almost ignorant of the principles of surgery; but success cannot attend the mere mechanical operator, who knows not the signs of a pyothorax, the clinical and microscopical symptoms of a waxy kidney, or the temperature record of a septic fever.

A professional career may be blasted, too, by the work of a jaded and over-worked body. Surgery requires an alert brain, a quick eye, a steady hand, a clear judgment; all absent when the machine is habitually worked beyond its limit of endurance. The causation of many inexplicable historical and political problems may be found in the bodily health of some actor involved; and so, the bodily functions of the surgeon are responsible for many of his acts and "mis-acts." It may seem an invidious comparison to say that the surgeon suffers more thus, than the physician; but is not the instant responsibility, often thrown upon him, harder to bear than the less sudden emergencies of the physician's life? The demand for immediate action based upon knowledge, uncalled-for during many previous years, is often appalling to the conscientious surgeon. "*Semper paratus*"—to be always ready—means incessant anatomical and surgical toil. No time to consult digest, lexicon or text-book is given to him who practices emergency surgery. The present exigency often demands instant action without needful instruments and without professional advice. In this respect city surgeons are so fortunately situated, that they often lack the inventive reliance of their country brothers. The latter will make a female catheter of a pipe stem, goose quill, or a straw, or vaccinate a baby with a needle point, while the former sits regretting the absence of pocket-case and lancet.

Again, the brilliancy of a possible success may

be dimmed by the surgeon's desire to show the prospective patient the exact degree of danger incurred in an impending operation. Indeed it is possible that some of us may be over-zealous in showing the disadvantages and dangers of operation in otherwise hopeless cases. The laity cannot see, under such circumstances, the future horrors of a prolonged life: and how far the present risks are to be assumed should, perhaps, be decided by the surgeon. This is, to my mind, one of the most wearing responsibilities of surgical life. When to urge and how strongly to urge operative procedures are often harassing conundrums. While thoroughly willing to undertake the most desperate operation, the surgeon finds a severe mental strain in the conscientious endeavor not to unduly encourage the assumption of such risks, and at the same time to give all that surgical science makes available for human suffering. The proper decision of this question has a direct influence upon personal and scientific success. Rashness and importunity in advising operations are always to be deprecated. The true surgeon never wants to operate, but is always ready when operation is justifiable. A mere cutter is neither a surgeon nor a humanitarian.

The successful surgeon is he of a discontented spirit; who courts criticism and fears it not; who criticises himself as cruelly as he judges others; who reviews his own deeds with a keen eye, with no tolerance for the bungler because he must say "*homo sum*." He has opportunity to see errors in his own work invisible to any looker-on. Let him search these with careful scrutiny, not covering them with self-complacency. It is said that the wound of a friend is sweeter than the kiss of an enemy; hence, one can well afford to hurt his own self-esteem, since success attends such suicidal policy. Open to conviction

must he be, not disdaining to learn from his superiors even if they be his rivals or his juniors. The ungenerous rejection of such knowledge and instruction argues self-conscious inferiority, or at least the absence of the security of conscious power. That the sun fears not the rival light of the new-born moon should be remembered both by institutions and individuals.

An important adjuvant to success in operative surgery is rapidity of action without flurry. "Ohne Hast, ohne Rast," the poet-philosopher's dictum well applies to surgery. Nimble brains and fingers are the surgeon's best equipment for operative perfection and success. To occupy five seconds in opening a felon, without anæsthesia, when two seconds is sufficient, is butchery. The witless apprentice knows that you can drive a nail effectively with a quick blow, while many times the power slowly applied is ineffectual. Surgery shows similar illustrations of the advantage of celerity. Want of this surgical alacrity is painfully evident even in those coming to post-graduate schools after years of professional practice. To be sure it is partly inexperience and ignorance, but much of it is mental lethargy. Such men are not fitted for surgeons.

The general standard of surgical excellence is lowered, in my opinion, by the unwarrantably high fees exacted at times by recognized leaders. Such fees compel the public to accept inefficient, though cheaper service, with a corresponding depreciation in the reality of surgical success; and at the same time indicate a failure on the surgeon's part to recognize the humanitarian side of professional life. No just man will charge more than his services are worth, because the patient is rich, any more than he will pay a pecuniary commission for consultation practice brought to his door.

What are the characteristic attributes of the personified Surgery of to-day, which make it in the eyes of the world almost an exact science; certainly thus exceeding its sister, Medicine.

Simplicity, accuracy, and certainty are the tripod upon which has been reared a wonderful structure of successful progress and aggression.

Its simplicity resides in its methods as well as its instruments. Contrast the simple and unvarying dressings, applicable to dissimilar conditions, of modern aseptic surgery with the former multitudinous formulæ, varying with the location of disease and the caprice of the individual surgeon. Then, each surgical condition had its specific application, and each surgeon his opinion as to the best application for such condition. Now, though there be preferences as to therapeutic means, the number of admissable formulæ is small; and personal deferentiation made for varying conditions almost unknown. The simplicity and uniformity of pharmaceutical preparations for internal medication would be incredible to the chirurgical polypharmacist of the last century. Absence of surgical complication and our accurate knowledge of physiological therapeusis have now reduced the surgeon's needs in this direction to a ludicrous minimum. A few ounces of ether, a few grains of corrosive sublimate or hydronaphthol, a few strands of catgut, plenty of boiling water and a piece of soap, constitute the pharmaceutical essentials of an extensive operation; and many surgeons do perfect work without the mercury or naphthol. This seems, indeed, a travesty of the outfit of Ambroise Paré or Baron Larrey.

Thus also is simplicity apparent in the construction of instrument and apparatus. Mechanical complication may be permitted, is, in fact, necessary to accurate performance, in wood and

metal, but it cannot replace manual dexterity in operations upon the changing and ever-varying living body. The attempt to substitute mechanical complexity for surgical skill, in operative methods and surgical appliances, dwarfs the surgeon's mental and manual development, increases the liability to mishap, and defeats his object, the best manipulative service to the diseased or injured patient.

I would not be understood to underrate the importance of properly made instruments or the disadvantage of inefficient ones. A poor workman is said to find fault with his tools. The counterpart is equally true, that a good surgeon never has poor tools. And yet, has any one of you ever had a trephine re-sharpened after successive operations have blunted its virgin teeth? Have you not often accepted from your instrument maker a gnawing forceps without a keen edge? Do you not know that chisels and scissors are proverbially as dull as a Bœotian shepherd? Such negligence, however, is venial; but a gimcrack lithotome or a safe-cutting skull perforator, warranted not to do harm in the clumsiest fingers, is a complicated abomination, deserving the reprobation of every surgeon who knows the location of the bladder and who has been taught to make an incision. A skillful surgeon is known by his deft fingers and few tools. To be equally deprecated is the manufacture of retroflexed, anteverted, doubly-twisted, and otherwise specially moulded splints, guaranteed to overcome muscular displacement that never occurs, or named after men who never recommend them. Such measures to replace the surgeon's brains by specially labeled appliances to suit every condition, is a plagiarism of the homœopathic globule-case with its numerical antidote to every human ill.

Complexity is allowable only when skill and simplicity fail to accomplish the necessary purpose. Permanent traction with adhesive plaster has succeeded the Desault splint for treating fractures of the femur. Let similar simplicity as successfully reign in all departments! The revolution has more than begun. May it be completed by American surgeons rejecting still other legacies of European combersomeness!

Accuracy is another factor of extreme importance in the evolution of successful surgery. The "rule of thumb" may be allowable in the culinary department of the household, but not in the diet-kitchen of the hospital, nor in the dosage or operative work of the surgeon.

Surgeons are especially inaccurate in their pathological knowledge, and this alone has added many unsuccessful cases to surgical history. Accurate pathological study, accurate and discriminating diagnoses, accurate and perfect operating, done with a hand that never trembles and a heart that never quails, will give us success to rival that already obtained in these marvelous latter days. This admirable state of science, however, cannot be reached, while professors affirm to their classes, that excised portions of nerve are enlarged or inflamed, when they themselves know nothing of its usual appearance except as seen in the shrunken indurated cadaver; while men persist in operating upon what they call "Empyem*ia*," or prescribe doses of that non-existent remedy "Sulphate of Cincho*na*." Is it unreasonable in me to decline to submit my body to operation at the hands of a man, who speaks of wounding the perito*netum*; or who defines breakbone fever as the fever that occurs subsequent to fracture? I believe accuracy to be the daughter of knowledge; and conclude that a slip-shod daughter argues little for the quality of her mother. Until

more definite diagnoses than pelvic cellulitis or constipation are made, when pyosalpinx or strangulated hernia exist, surgery cannot expect to rival the exactness and precision of the higher mathematics. It is said that surgery is not an exact science. "Alas! too true" replies the average surgeon, and on he goes, with cool complacency, in his well-worn path of indifferent inaccuracy.

I know of no greater need of accuracy than in the compilation of statistics. Many otherwise trustworthy men assure us of their ratio of successes or failure by reference to their unaided memory, than which there can be no more treacherous guide. I recently read an article, in which it was stated that resort had never been made by the author to a certain operation, because a more effectual and better procedure had been adopted by him; and yet, I myself had seen him use the very expedient which he denied, and of which the recollection had been blotted from his untrustworthy memory. The inaccurate statements of the clinical amphitheatre well enforce the axiom that, if speech makes the ready man, writing is required to make an accurate one.

Accuracy of knowledge, however, avails little, unless seconded by accuracy of performance. Ligation of the brachial plexus is not likely to cure aneurism of the axillary artery, nor division of bands of cellular tissue certain to correct strabismus due to hyperopia; a stone in the bladder, moreover, will certainly elude the grasp of the surgeon who pushes his forceps between bladder and rectum. Similar errors have been committed, gentlemen—not by you, perhaps, but certainly by me. It is unpleasant to admit it, I know, but if conviction of sin be the first step toward salvation, the admission of incompetent surgery is the beginning of surgical success.

Because I once treated a thyroid luxation as a fracture of the femoral neck, and again made a hole in the sclerotic when doing a tenotomy of the internal rectus, I ought to be more competent to treat those conditions, than the wise man who never thus blundered.

Accurate operating demands well-made, keen and simple instruments, but even these, as I have previously said, require the guidance of a deft hand. By such a hand I have seen a creditable cataract extraction done with an abscess bistoury and an ear-pick.

The crowning achievement of modern surgery is its certainty of result. The simplicity of its detail, the accuracy of its doctrine and the dexterity of its exponents, have combined to render the prognosis of operative cases almost prophetic. It is not many years since the mortality of amputation of the thigh and that after resection of the knee was appalling, since trephining was dreaded as a mortal operation, abdominal section almost eschewed, and ovarian tumors looked upon as incurable. Need I weary you with speech concerning these operations to-day?

Few of you will dissent from the statement that in wound-surgery certainty of success depends on the thoroughness with which the maxims of asepsis and antisepsis are carried out. Not many years ago this was a mooted question in the meetings of this Academy. To-day it is an unquestioned surgical truth. The advocates of aseptic surgery were at first derided; but truth can afford to wait, and they, believing they had found the truth, waited. It was a repetition of the trust of the old astronomer, who declared he could well wait a hundred years for a reader, since God had waited a thousand years for an observer. It has been, and still is, difficult to convince the septic sceptic of this decade that the

dirty finger-nail is more potent in its deadly work than the iron nail of Jezebel, that it has slain more than the dreaded yellow fever and cholera; and that the aseptic cleanliness of the surgeon is better than the so-called godliness of the Christian scientist. With all reverence I declare that the clean hand is more necessary to the successful surgeon than the pure heart. The fingers of a dentist may be clean enough to put into a lady's mouth, and yet be too unclean to operate upon her body. Let a surgeon cough or sneeze in a patient's face if he please, but he dare not into the opened abdomen. I believe my years are less than those of any other Fellow of this Academy, yet, I am not so young but that I have upon my shoulders the responsibility of death due to my ignorant prejudice or filthiness. The occasional rapid healing of operation wounds was attributed by me to constitutional beneficence of the patient, instead of to accidental cleanliness of the operator. Perhaps it is this consciousness of dereliction which makes me feel so strongly the error of those who reject the relative certainties of aseptic practice. While I am not a disciple of those who make a fad of chemical antiseptics, while I care not whether a man make himself, his patient and his apparatus aseptic by soap, water and heat, or by those agents associated with chemical solutions; I do not assert that he who believes all such precautions unnecessary and who acts in accordance with that belief, is dangerous to the community, and has no right to practice operative surgery. One who shoots his friend with an "unloaded" musket levelled at his head, is considered a fool and exposed to public condemnation. If the septic surgeon who inoculates his patient with fatal disease be similarly treated, the world's misery will be much lessened. The old time abolitionist be-

lieved that one on God's side made a majority; surely the surgeon who believes in non-septic operations is on truth's side, which is always God's side. A devotee to the religion of asepticism, of even mediocre skill, will do the world more good service than a septic genius, who to the experience and wisdom of a John Hunter, adds the manual skill of a Robert Liston.

If writers and speakers would cease quarreling about asepsis and antisepsis as words and realize that it is facts, not definitions or theories that demand attention, there would soon be such a combined army of non-septic surgeons that the septic murderer would cease to exist. It is the wrangle as to whether cleanliness without chemicals is better than chemicals alone that retards the wheels of progress. I hear men declare that strict cleanliness is unnecessary, if solutions of chemical antiseptics are employed; I hear others say that they get good results from cleanliness without antiseptics, when it is evident from their actions and work that they know not the meaning of surgical cleanliness, nor the characteristics of aseptic repair. These abortive attempts at non-septic surgery are most damaging witnesses against the true system, since the sceptical point to this wilful or ignorant carelessness of detail as evidence of the uncertainty of surgical success.

Much has recently been said, in this city, as to the legal responsibility of those who, neglecting to accept the comparative certainty of non-septic surgery, subject their patients to the greater risk of septic complications attendant upon operations done in the old manner. The importance of this topic and the manner in which I have been involved in its discussion are my excuse for dwelling upon it at length.

Justice Tyndall declares that undertaking to practice a profession is the assumption of an ob-

ligation which, though implied, has at the same time all the force and validity of a formal contract; and Stephen Smith, who quotes this opinion, says that the maxims of aseptic and antiseptic surgery have been so generally approved and adopted by surgical authorities, that they must now be regarded as established principles of practice. Hence, if a surgeon fail to apply these principles with reasonable care and diligence, he may justly be held responsible for unfavorable results which the aseptic methods of treatment would have prevented. Smith even goes further, and contends that a surgeon would also be responsible for neglect, if he declined to resort to an operation, capable of affording relief, because of its danger under old methods.

The surgeon may, it is true, decline to undertake any case; but having accepted the trust he is responsible for the results of treatment. Prof. S. W. Gross is reported to have said: "As to aseptic surgery, I can only say that if any one has been taught the modern methods and neglects them, and death occurs from erysipelas, pyemia, or septic complications, he cannot be held irresponsible."

Dr. Busey is quoted to have stated his opinion of antisepsis in midwifery as follows: "Inexcusable neglect, and inefficient and careless administration of the well known rules and recognized appliances of obstetric antisepsis must, in view of their admitted value, be regarded as criminal."

My personal view is very much in accord with these sentiments, for I consider the surgeon who does not practice in accordance with the principles of modern non-septic surgery a menace to the health of the community. Though I care not for the size of his doses or the variety of his remedies, which must depend upon individual re-

quirements and professional choice, I can allow no such latitude in the rejection of such generally accepted truths as those of which I now speak.

Amputation of a finger-tip may possibly be permissible with a dirty scalpel and dirty hands, though I question it; but certainly no one should be allowed to amputate an arm or a leg under such conditions of risk. He who, from prejudice or inexcusable ignorance, performs such an objectionable operation may, or may not, be legally responsible if fatal pyemia occurs, but I am inclined to think that he is. At any rate it would be wise in him not to call upon me as a witness in his defense. These opinions may increase the already heavy responsibility of the surgeon's life; but, on the other hand, the greater certainty of success should insure him larger fees and greater satisfaction.

My own practice is to first endeavor to obtain absolute cleanliness of patient, operator, assistants, instruments and dressings; and then, on account of the difficulty of attaining perfection in this regard, to employ, as a rule, chemical antiseptics as an additional safeguard. There is no question in my mind that cleanliness is the more important element in my success at preventing suppurative accidents. Still, accidental failure in absolute cleanliness or incidental carelessness on the part of myself or assistants is liable to be followed by such disaster that I usually, though not always, prefer the association of cleanliness and antiseptic solutions. Moreover, septic or specific inoculation of the surgeon's own hands is unlikely to occur when they are bathed in germicidal agents.

The genius of successful surgery has led to unexampled and unexpected progress; for aggressive surgery is the outcome of the success that has followed the adoption of aseptic carefulness. Before the aseptic era aggression was often sheer reck

lessness, and led, therefore, to a reactive conservatism which still holds dangerously captive many intelligent surgeons of the older school. Conservatism is, up to a certain point, a public virtue; but when it becomes a stubborn resistance to the certainties of scientific progress and to the conviction of statistical argument, it is a dangerous mental attribute. The self-styled conservative has been well described as a man who waits for somebody else to tell him what to do and how best to do it. He who will not be convinced by irrefragable proof is as unworthy the name of surgeon as he who accepts every wild unproved hypothesis for an axiomatic truth. I fear there are to-day surgical counterparts of the old Scotch Professor of Chemistry who described Sir Humphrey Davy as "a verra troublesome person."

The continued life of the erroneous teaching of old text-books and old-brained expositors of whatever age perpetuates this same mischievous conservatism. The progress of ophthalmic surgery was much retarded by the retention for years of the old literature relative to diseases of the fundus. After the invention of the ophthalmoscope this literature ought to have been destroyed, as we pull down the log cabin to make room for the city mansion. So it is now in general surgery; the retention in text-books of opinions and statistics, formulated ten or fifteen years ago, retards the progress of the art and confuses the conscientious student. Mortality records compiled before the aseptic period are absolutely valueless, and as unworthy of present consideration as the chapters on pelvic cellulitis penned a few years since. Why not let all this musty literature be destroyed; and by learning from the recent work of both old and young, keep in line with the quick step of surgical advance. The elder may, it is true, guide the younger for a time, but it is to the

bright and buoyant hope of youth that we owe that aggressive progress which has carried us so far, that we may dare much and hope everything. Has it not been the young who have advanced our surgical knowledge of the heart, brain, spine, pancreas, kidney and abdomen? The old who led in their young days are in turn distanced by youth, even though they be open to conviction and ready to advance. In surgery as in other sciences, "*quod hodie exemplis tuemur, mox inter exempla erit.*"

Active medical associations, accessible museums and convenient reference libraries are efficient aids to successful surgery. Little good arises, however, from the perpetuation of mutual admiration societies of limited and lazy membership, of associations of garrulous and inexact observers, of unclassified museums with unlabeled specimens, or of libraries whose books are buried in hospital wards or shut up in rooms with long-lost keys.

Of all public adjuvants to successful surgery the hospital is preëminent, but in proportion to its power for good is its fateful power for evil. The best surgery in the world is done in hospitals, because the best nursing, the best hygiene, the best surgical talent can there be obtained. It is undoubted, however, that the best place to see the worst surgery in the world is often the hospital. Errors of judgment, silly modes of dressing, unjustifiable operations and ignorant pretense are at times to be found in such institutions.

Truth was spoken by the writer who stated that in hospitals might be seen the most palpable and deplorable errors openly and shamelessly committed. This denunciation should not be hurled against all hospitals and all hospital surgeons; but though a ward's inmates often get far better surgical attendance gratis than many of the rich pay for in their own homes, it is an undoubted fact that much bad surgery can be seen

in public institutions. This is due to the fact that an inefficient or reckless surgeon is encouraged to assume responsibilities, under institutional protection, which he would shun, if exposed to the glaring light and searching inspection of private practice. Whenever the appointing power in hospitals is lodged in laymen whose vote is determined solely by the solicitous words of other admiring laymen, there is possibility, at least, of surgical posts falling into the hands of unfit persons—unfitted by education, training, and experience for the assumption of surgical responsibility. It does not follow that the agreeable friend of a fellow bank director knows the location of the cerebral centres or the most approved after-treatment for amputations. Yet many hospital appointments are made on this basis. If such officials could easily be displaced by a changing administration, harm might soon be averted; but it is notorious that the more incompetent one is, the more firmly does he maintain his grasp upon attained power.

In certain particulars we could improve our hospital service by adopting measures much more common abroad than in America. The rule retiring all surgeons upon their reaching the period of life denominated senile, is a good one. The conservatism and infirmity of advancing years are usually evident to all other men before their gradual advent convinces their possessor of his inadequacy for onerous hospital duty. Affection, and respect for age, however praiseworthy in the abstract, do not justify the ruthless sacrifice of true surgical success. He who is incompetent, from disease, age, vice or ignorance, to attend to the surgical needs of the hospital authorities themselves is not competent to take in hand the lives and limbs of their pensioners. Worthy of all

praise are the many institutions in which these views dictate action!

A continuous service, instead of the usual three or six months' service of the conventional American hospital, is perhaps the rule in European institutions; it has been advocated here. I have personally objected to it on the ground that, with the resident staff organized as at present, few surgeons with practice enough to warrant appointment could afford time throughout the entire year to properly attend to hospital work. It would be very different if in each hospital there lived a house surgeon of several years' experience, who could do emergency operations and decide ordinary surgical problems. Then the attending chief surgeon need not drive several miles to see a sprained ankle or abscess of the breast, or be dragged from his bed at night to catheterize a distended bladder.

Indeed, metropolitan growth is such that hospitals often become so distant from residential centres that it is difficult to secure men of prominence and experience to serve them. This difficulty can only be met by attaching a competent house surgeon to such hospitals, or by paying an annual salary to the better equipped attending surgeons for their loss of time. The superintendent, matron, and apothecary are paid, while the physician and surgeon, without whose work no hospital could exist, serve without remuneration. The mutual relation of distance, efficiency and salary will ere long become important problems for hospital trustees.

In spite of my apologetic prologue I have detained you now too long with this rehearsal of trite and familiar truths; but, fortunately, not so long as it has taken my unworthy pen to formulate them. My words may perhaps simulate an essay on Unsuccessful Surgery. Still, the pre-

cepts of successful living are given in the negative imperatives of the Decalogue. May not those of Successful Surgery assume a similar form?

A great English surgeon has recently expressed the opinion that the final limits of surgery have been reached, in the direction of all that is manipulative and mechanical; and that we have attained, in many of our most important operations, the final limit to which surgery can be carried. Need it be said that he is an old man? Surely this is not the conviction of young minds. Have not surgeons recently made artificial pupils in the sclerotic to relieve heretofore irremediable blindness? Do we not know that the latest vivisectional experiment has successfully constructed a new urinary bladder of previously exsected intestine?

The flame of progress must never be extinguished by hopeless inaction; but ever cherished by successive lovers, imitating the fleet Grecian whose quick hand snatched the flickering torch from his weary comrade's feeble grasp.

The successful future of chirurgical art will still progress, and will, as now, depend on accurate anatomy, careful though ludicrous cleanliness, facile fingers and erudite common sense. Gentle, kind and true in the doing, reliant, bold and firm in that done must he be, who is to aid in the advance towards that surgical perfection which it is intended we shall never reach.